

Title of the grant: Validation of the Atmospheric Infrared Sounder (AIRS)
over the Antarctic Plateau: Low radiance, low humidity, and thin clouds

Type of report: Final Report

Name of the principal investigator: Dr. David C. Tobin

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Summary of Research:

Work conducted under this grant is in support of the Principle Investigator, Dr. Von Walden of the University of Idaho. The main goal of the project has been to use specialized measurements collected at the Antarctic Plateau to provide validation of the Atmospheric InfraRed Sounder (AIRS) spectral radiances and some AIRS Level 2 products. As proposed, efforts conducted at the University of Wisconsin are focused on providing technical information, data, and software in support of the validation studies.

Data:

AIRS Level 1B granule data files coincident with satellite overpasses of the Dome Concordia field site during field operation periods have been retrieved and provided to the investigators. AIRS Level 1 and Level 2 "matchup files" for all overpasses (August 2002 to present) of the Dome Concordia site for all have been retrieved and provided to the investigators. AIRS Spectral Response Function (SRF) data files have been provided to the investigators.

Software:

Software to read, display, and interpret the AIRS granule and matchup data files has been written and provided to the investigators. Software that serves as an interface to the AIRS line-by-line radiative transfer model (kCARTA) has been written and provided to the investigators. Software to load and interpret the AIRS channel properties files has been written and provided to the investigators. Software to load the AIRS SRFs and to convolve a monochromatic radiance spectrum with the SRFs has been written and provided to the investigators.

Analysis:

Preliminary analyses of the PAERI / AIRS comparisons have utilized the data and software provided under this effort and has been reported at AIRS science team and other meetings.

GPS:

A ground based two channel GPS system for retrieving total column water vapor has been provided and used during the field operations.

Presentations and Publications:

- Presentation at the AIRS Science Team meeting, UPDATE: Validation of AIRS over the Antarctic Plateau: *Low radiance, low humidity, and thin clouds*, Camp Springs, MD, September 2002.
- Poster presentation at the 7th AMS Conference on Polar Meteorology and Oceanography, Validation of the Atmospheric Infrared Sounder over the Antarctic Plateau, Hyannis, MA, 12-16 May 2003.
- Presentation at the AIRS Science Team meeting, An Update on AIRS Validation Activities at Dome Concordia, Antarctica, Greenbelt, MD, 30 March – 1 April 2004.

Inventions:

No inventions resulted from this work.